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(54) Demountable hardtop for a vehicle

(57) A demountable hardtop for a vehicle, such as a convertible or cabriolet car or pick up truck or box trailer, comprises a plurality of rigid panels including upper roof panels 4a, 4b, 4c and 4d and side roof panels 5a, 5b and 5c with joining means to connect the panels to one another and/or to the vehicle body. A tensioning clamp 7 may be provided to be coupled to rear roof panels 4c and 4d in order to sandwich the side roof panels between the upper roof panels and the vehicle body (figures 3a, 3b). The panels of the hardtop may be stored in the boot of the vehicle (figure 2) to which may be fixed part 6 of the hardtop, an apron, in order to increase the boot capacity. The apron may be provided with a flap to give access to the boot.

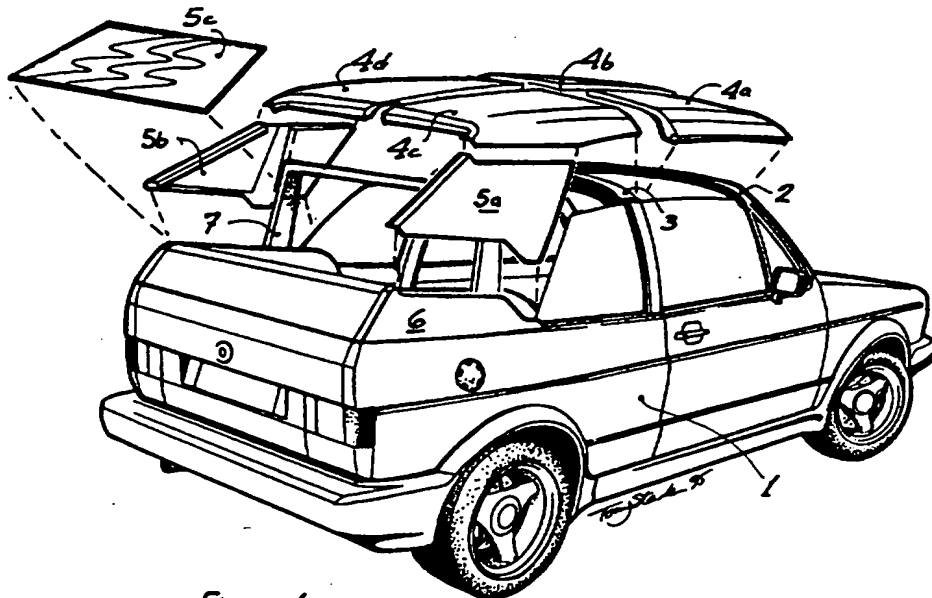


Figure 1

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The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

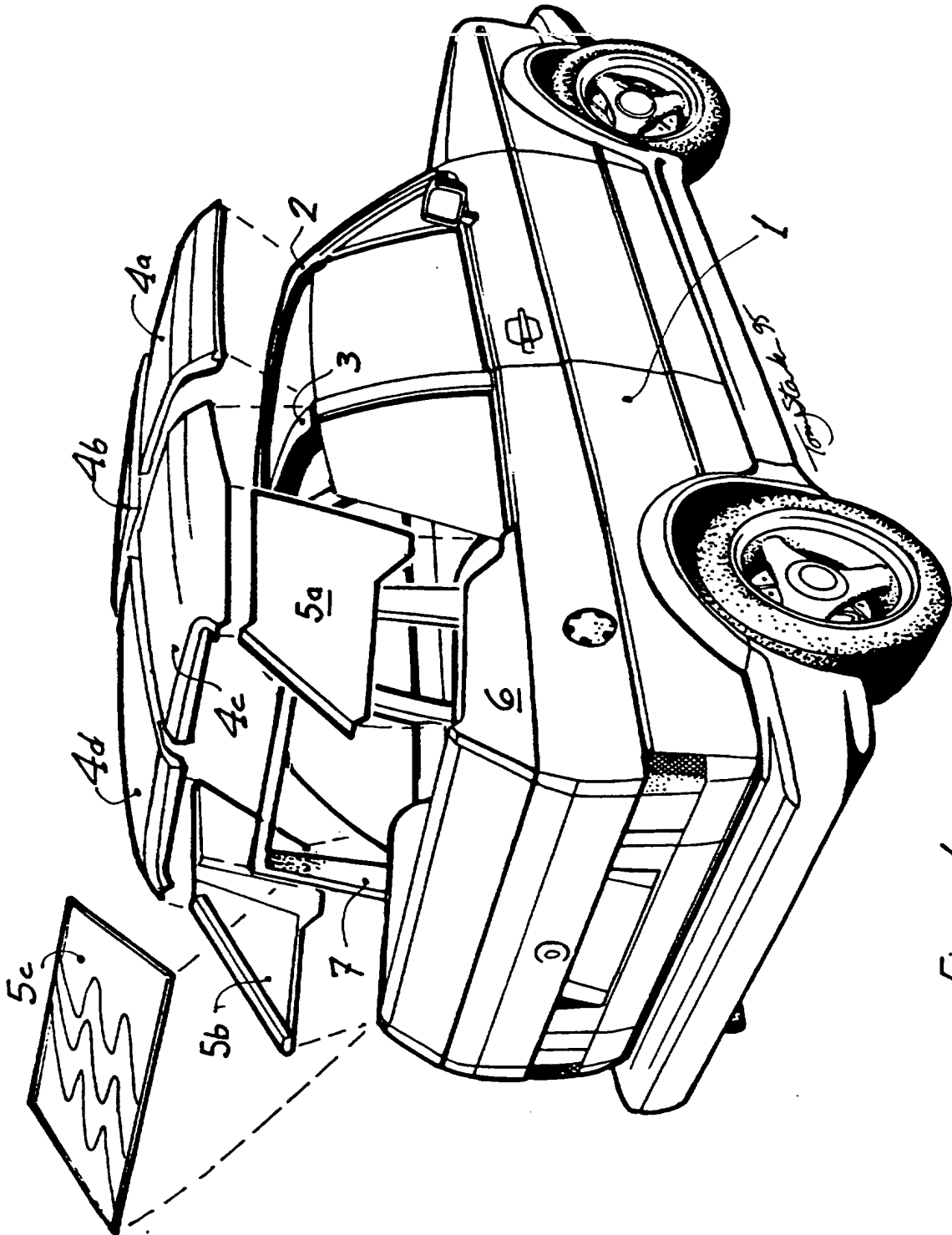


Figure 1

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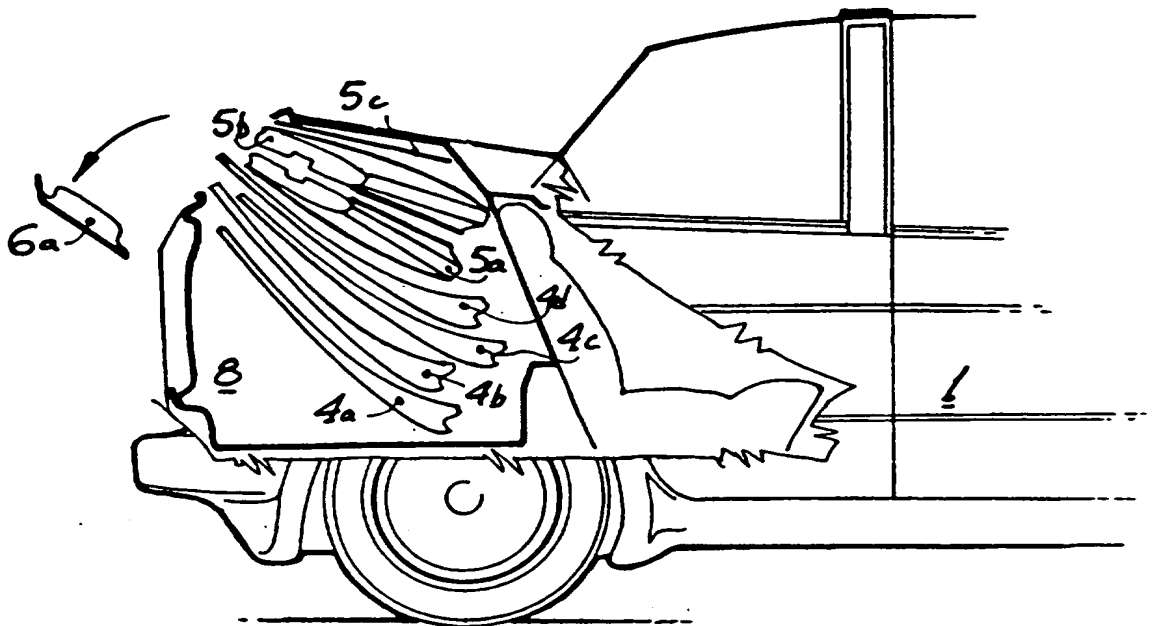
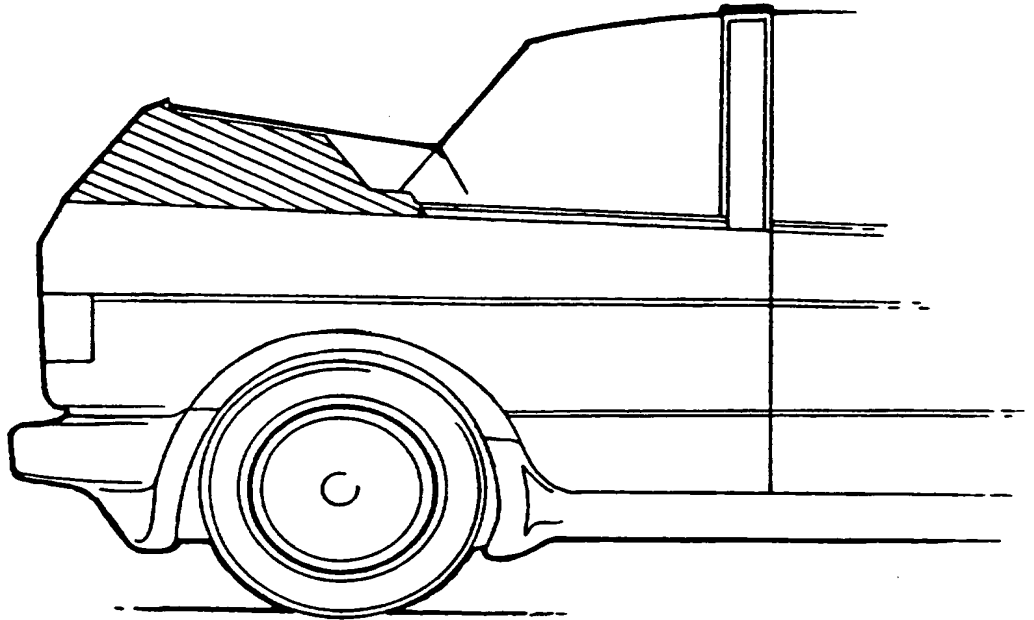
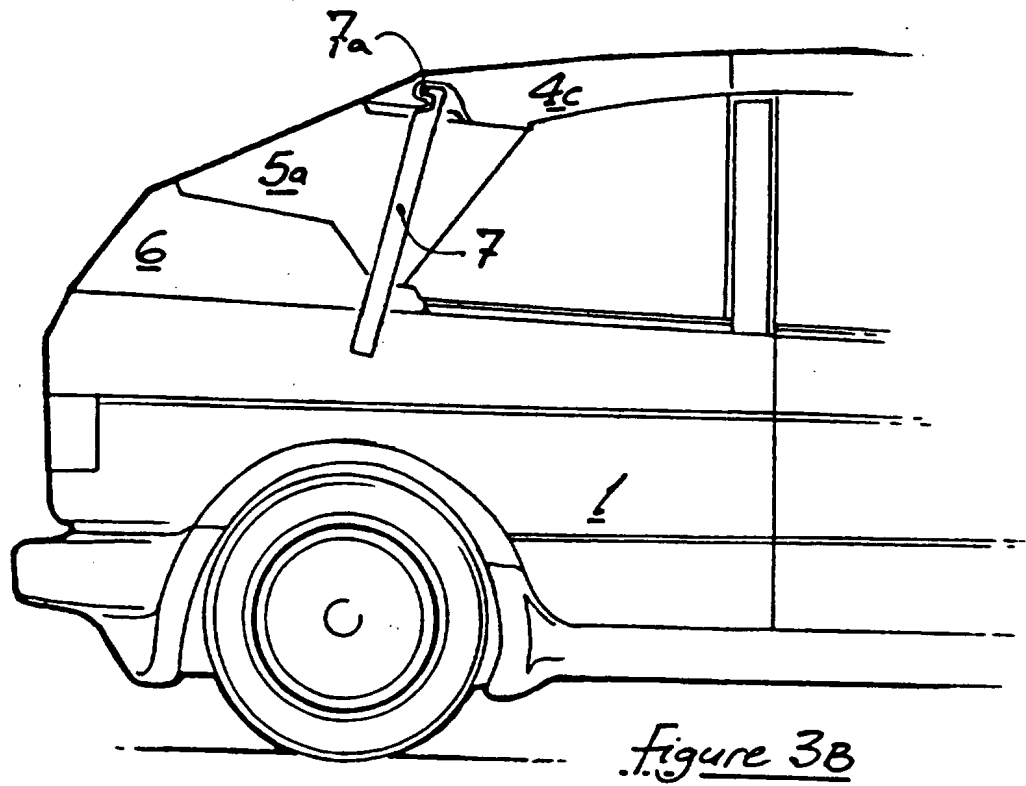
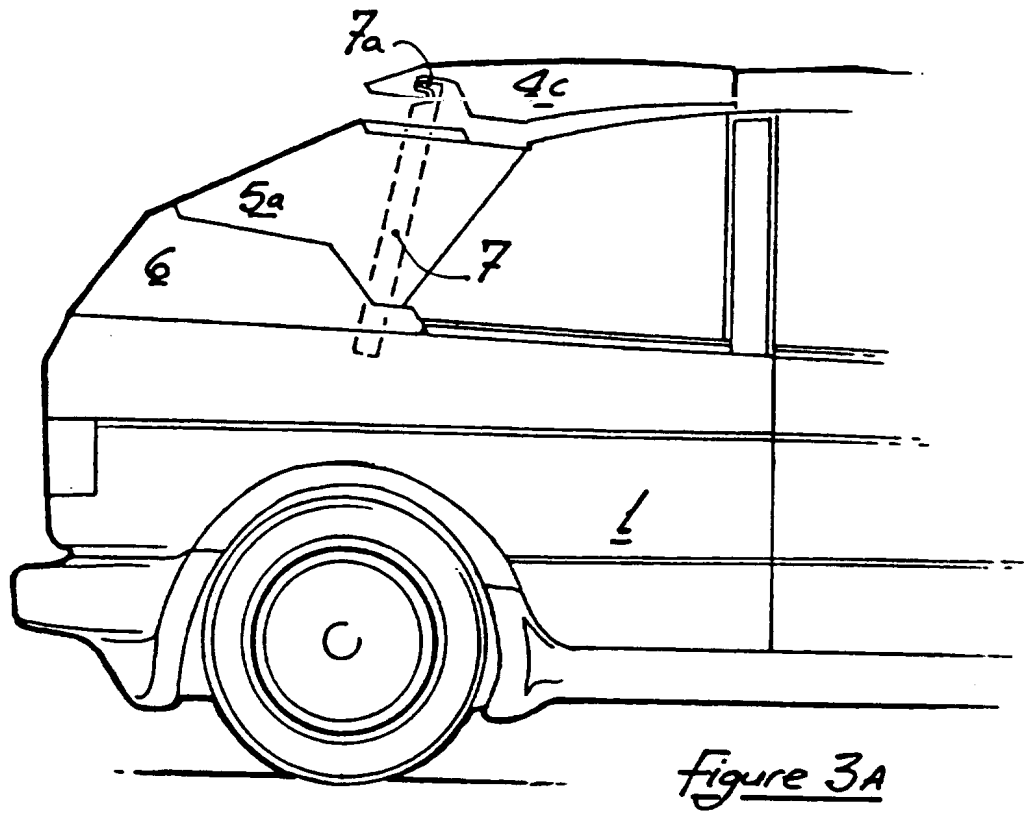


Figure 2



The present invention relates to a demountable hard top for a vehicle such as a car.

A number of "cabriolet" or "convertible" cars are produced each year having a roof or soft top made of fabric. They have the attraction that the roof can be opened as soon as desired on sunny days and closed quickly in wet weather. One disadvantage of the cabriolet is that the fabric roof can be easily cut by thieves, making easy access to the car. Another disadvantage is that the fabric of the roof can leak, particularly where it joins the rigid structure of the car, and at high speeds it can lose its shape and flap often resulting in undesirable noise. Also a fabric roof does not provide good thermal insulation.

It is possible, for example in winter, to replace fabric roofs with a hard top. Such hard tops are however bulky to store when not in use, and cannot be removed and stored in a car thus making the "impromptu" removal of the roof impossible. Such hard tops are therefore semi-permanent installations.

The invention seeks to provide a demountable hard top for a cabriolet car which provides much of the benefits of both the soft top and a hard top.

According to the present invention there is provided a demountable hard top for a vehicle comprising a plurality of substantially rigid panels, at least some having a first joining means

to releasably interconnect two or more panels together and/or a second joining means to releasably connect a panel to part of the vehicle body.

Preferably the panels include a plurality of roof panels and a plurality of side panels. In one embodiment of the invention tensioning means are provide to sandwich one or more side panels between the vehicle body and one or more roof panels.

The invention may further comprise an apron for mounting around the rear of the vehicle to which the side panels are mounted. A frame may extend from the vehicle body to provide support for the roof and/or side panels. The frame may also form part of a tensioning means to sandwich one or more side panels between the vehicle body and one or more roof panels. The apron may form part of the boot of the vehicle to increase the capacity thereof thereby to provide increased storage space for the panels when demounted. The apron may comprise a flap to give access to the boot of the car through which the panels can be inserted.

In one embodiment of the invention there are provided two interconnectable front roof panels to form a bridge between the top of a car wind screen and a central roll bar, three interconnectable side panels for connection to the rear of the car, and two interconnectable rear roof panels to form a bridge between the roll bar and the side panels. Preferably the three side panels form a generally U-shape with the central panel forming the car rear window.

The invention will now be described with reference to the accompanying drawings in which:

Figure 1 shows a perspective view of a car with an exploded view of a demountable hard top,

Figure 2 shows a side view the hard top demounted and stored in the boot of a car, and

Figures 3a and 3b show a tensioning means to sandwich side panels between the vehicle body and roof panels.

Referring to Figure 1 there is shown a vehicle in the form of a cabriolet car 1 having a wind screen frame 2 and a roll bar 3 . A demountable hard top is provided by seven panels. There are two front roof panels 4a,4b forming a bridge between the frame 2 and roll bar 3, and two rear roof panels 4c,4d forming the bridge between roll bar 3 and three side panels 5a,5b,5c arranged in a U-shape. Panel 5c forms the rear window of the car. Also forming part of the hard top is an apron 6 which may be permanently secured to the car body e.g. by using bolts, screws or rivets and sealants.

The panels 4a,4b have a first joining means to releasably interconnect themselves together and a second joining means to releasably connect themselves to the top of the wind screen frame 2 and the top of the roll bar 3. Panels 4c,4d have a first joining means to releasably interconnect themselves together and a second joining means to releasably connect themselves to the top of the roll bar 3 and the top of the side panels 5a,5b,5c. Side panels 5a,5c,5d have a first joining

means to releasably interconnect themselves together and a second joining means to releasably connect themselves to the rear roof panels 4c,4d and the top of the apron 6.

The first and second joining means take any suitable form not specifically described herein but of the type known in the art which preferably include rubber seals to make the hard top weatherproof. If desired joining strips forming part of the second joining means may be fitted to the roll bar 3 and window frame 2.

Extending from and pivoted to the car body is a frame 7 which can be raised from a horizontal position (when the roof is demounted) to a substantially vertical position when the roof is erected. The frame provides a tensioning means to sandwich side panels 5a,5b,5c between apron 6 on the vehicle body and the rear roof panels 4c,4d as more fully described below with reference to Figures 3a and 3b.

Referring now to Figure 2, the apron may form part of the boot 8 of the car 1 to increase the capacity thereof thereby to provide increase storage space for the panels when demounted.

The apron may comprise a flap 6a which can be removed to give access to the boot of the car through which the panels can be inserted as shown. The increased boot space allows room for luggage in addition to the panels. The top when demounted can be stored in the boot, ready to be erected as soon as desired. If desired sleeves can be formed in the boot cavity as provided

by the boot 8 and apron 6 to separate the panels. Side window panel 5c may be hinged to the apron 6 if desired.

Referring to Figures 3a,3b, it will be seen that the frame 7 in its substantially vertical position can be moved from a raised (Figure 3a) to a lowered (Figure 3b) position. When erecting the top, the frame is in the raised position of Figure 3a. The side panels 5a,5b,5c are connected to the apron 6. The upper edge of the frame 7 is engaged with the rear of rear roof panels 4c,4d by inserting L-shaped projection 7a into recesses on the rear of rear roof panels 4c,4d. The frame is then lowered to the position shown in Figure 3b thereby providing the tensioning means to sandwich side panels 5a,5b,5c between apron 6 on the vehicle body and the rear roof panels 4c,4d. Any suitable mechanism could be used to raise and lower frame 7 as is known in the art such as levers. Instead of a frame 7 any other form of tensioning means could be used, such as a telescopic or variable length tie.

The panels of the invention may be formed of any suitable material such as glass-fibre, moulded plastics such as polycarbonate, or metal. The panels may be of any colour and lined for thermal insulation and aesthetic looks.

The demountable top gives good security to the car and the benefits of a "cabriolet". The principle of the demountable top of the invention could be applied to vehicles other than cars

such as pick up trucks or box trailers.

It is possible to connect the side panels to the car without the use of the apron. Also the tensioning means is not essential. The invention thus in its most basic form could be formed at least two preferably at least three panels, each panel either releasably interconnectable with another by a first joining means and/or releasably interconnectable to a part of the vehicle by a second joining means. The first and second joining means may use the same or different principles.

Further modifications will be apparent to those skilled in the art without departing from the scope of the present invention.

CLAIMS

- 1 A vehicle demountable hard top whose panels are mounted onto the vehicle using a tensioning/sandwiching method whereby the upper roof panels are releasably fixed to the tensioning mechanism and upon operation (as when clamping) the side roof panels are effectively sandwiched between the upper roof panels and the vehicle body.
- 2 A vehicle demountable hardtop as claimed in Claim 1 where the hard top can be dismantled into a plurality of panels of such size that they may all be stored in the boot of the vehicle.
- 3 A vehicle demountable hard top as claimed in Claim 1 where part of the hard top system which is fixed to the top rear of the vehicle is used to increase the capacity of the boot space.



Application No: GB 9517534.5
Claims searched: 1 to 3

Examiner: Karl Whitfield
Date of search: 24 October 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): B7B BAC, BAD

Int Cl (Ed.6): B60J 7/08, 7/10, 7/16

Other: Online database: Derwent World Patents Index accessed via Questel

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2099377 A (ARTWEGER-INDUSTRIE) see especially figures	
A	GB 2086316 A (T.V.R.) see especially figure 3	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.